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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,730	03/20/2004	Seng-Tiong Ho		2729
7590	05/05/2006		EXAMINER	
Seng-Tiong Ho 120 Picardy Lane Wheeling, IL 60090			DETSCHEL, MARISSA	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/708,730		HO ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
		Marissa J. Detschel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/20/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement filed on March 20, 2004, has been fully considered by the examiner.

### *Oath/Declaration*

A new oath or declaration is required because the S-signature is improper due to a lack of slashes. According to 37 CFR 1.4(d)2(i) as set forth below,

- (2) *S-signature*. An S-signature is a signature inserted between forward slash marks, but not a handwritten signature as defined by § 1.4(d)(1). An S-signature includes any signature made by electronic or mechanical means, and any other mode of making or applying a signature not covered by either a handwritten signature of § 1.4(d)(1) or an Office Electronic Filing System (EFS) character coded signature of § 1.4(d)(3). Correspondence being filed in the Office in paper, by facsimile transmission as provided in § 1.6(d), with a signature in permanent dark ink or its equivalent, or via the Office Electronic Filing System as an EFS Tag(ged) Image File Format (TIFF) attachment, for a patent application, patent, or a reexamination proceeding may be S-signature signed instead of being personally signed (i.e., with a handwritten signature) as provided for in paragraph (d)(1) of this section. The requirements for an S-signature under this paragraph (d)(2) are as follows.
  - (i) The S-signature must consist only of letters, or Arabic numerals, or both, with appropriate spaces and commas, periods, apostrophes, or hyphens for punctuation, and the person signing the correspondence must insert his or her own S-signature with a first single forward slash mark before, and a second single forward slash mark after, the S-signature (e.g., /Dr. James T. Jones, Jr./); and

The wording of an oath or declaration cannot be amended. If the wording is not correct or if all of the required affirmations have not been made or if it has not been

Art Unit: 2877

properly subscribed to, a new oath or declaration is required. The new oath or declaration must properly identify the application of which it is to form a part, preferably by application number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and 602.02.

### ***Drawings***

The following is provided for the applicant:

#### **INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

##### **Replacement Drawing Sheets**

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

##### **Annotated Drawing Sheets**

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

##### **Timing of Corrections**

Art Unit: 2877

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

The drawings are objected to because Figures 1c and 5A are informal and lacking in details. Examiner suggests inserting the values for  $\theta_{div}$  for each of the ray tracings shown in both figures. Examiner furthermore suggests providing labels in the center figure of figure 5A.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

Art Unit: 2877

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

In the very beginning of the Abstract, the phrase "21File name" should be removed. Furthermore, the phrases "The location of the grooves is calculated based on two conditions. The first one being that the path-difference between adjacent grooves should be an integral multiple of the wavelength in the medium. The second one being specific for a particular design goal of a curved-grating spectrometer." is grammatically incorrect, incorporating sentence fragments into the abstract, represented by the last two lines of the phrase. Examiner suggests changing this to "The location of the grooves is calculated based on two conditions: the first one being that the path-difference between adjacent grooves should be an integral multiple of the wavelength in the medium and the second one being specific for a particular design goal of a curved-grating spectrometer."

Various grammatical errors appear throughout the specification.

- The use of "" in the phrase as "Maxwell's wave equations" (for example, paragraph 6, line 14 and paragraph 29, line 15) and "x<sub>i</sub>'s" (for example, paragraph 16, lines 1 and 3) is incorrect and should be "Maxwell's wave equations" and "x<sub>i</sub>'s"
- The last line of paragraph 16 ends in a ",'" and should end in a "."
- In paragraph 6, line 10, the phrase " $\theta_{div}$  4DEG" should read " $\theta_{div}=4DEG$ "



- The equations in paragraph 13, 34, 38, 39, 40, 58, and 61 contain  
 $\square$  where  $\theta$  or  $\lambda$  should be inserted.

All mathematical variables (i.e.  $\theta$ ,  $\lambda$ ,  $m$ ,  $n$ ) set forth in the specification should be italicized.

Appropriate correction is required.

### ***Claim Objections***

All of the claims are objected to because of the following informalities:

By way of issues with insufficient antecedent basis:

- As to claim 1, the limitation "the spectra" appears in line 1 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a spectra"
- As to claim 1, the limitation "the detection" appears in line 3 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a detection"
- As to claim 1, the limitation "the entry" appears in line 5 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "an entry"
- As to claim 1, the limitation "the location" appears in line 6 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a location"

- As to claim 1, the limitation "the performance" appears in line 7 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a performance"
- As to claim 1, the limitation "the location" appears in line 9 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a location"
- As to claim 1, the limitation "the performance" appears in line 10-11 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a performance"
- As to claim 1, the limitation "the distance" appears in line 14 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a distance"
- As to claim 1, the limitation "the center" appears in line 16 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a center"
- As to claim 1, the limitation "the diffraction order" appears in line 16-17 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a diffraction order"
- As to claim 1, the limitation "the refractive index of the medium" appears in line 17 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a refractive index of a medium"



- As to claim 2, the limitation "the tangent circle" appears in line 2-3 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a tangent circle"
- As to claim 3, the limitation "the straight, sinusoidal, and elliptical shapes" appears in line 2-3 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a straight, sinusoidal, and elliptical shape"
- As to claim 4, the limitation "the Littrow configuration" appears in line 2-3 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a Littrow configuration"
- As to claim 7, the limitation "the spectra composition" appears in line 1-2 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a spectra composition"
- As to claim 7, the limitation "the distance" appears in line 7 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a distance"
- As to claim 7, the limitation "the location" appears in line 8 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a location"
- As to claim 7, the limitation "the center" appears in line 9 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a center"

Art Unit: 2877

- As to claim 7, the limitation "the diffraction order" appears in line 9 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a diffraction order"
- As to claim 7, the limitation "the refractive index of the medium" appears in line 10 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a refractive index of a medium"
- As to claim 8, the limitation "the spectra composition" appears in line 1 of this claim and there is insufficient antecedent basis for this limitation. Examiner suggests changing this to "a spectra composition"

By way of grammatical errors:

- As to claims 2-6, the phrase "The spectrometer as recited in claim 1" should read "The spectrometer as recited in claim 1,"
- As to claim 8, the phrase "a. adjusting location of an entrance slit in order to have best performance" in lines 1-2 of this claim should read "a. adjusting a location of an entrance slit in order to have a best performance"
- As to claim 8, the phrase "b. adjusting location of a detector in order to have best performance" in lines 1-2 of this claim should read "b. adjusting a location of a detector in order to have a best performance"

- As to claim 1, the phrase "the refractive index of the medium and optionally on the location" should read "the refractive index of the medium and, optionally, on the location" in the last two lines of this claim.
- As to claim 7, the phrase "the refractive index of the medium and optionally on the location" should read "the refractive index of the medium and, optionally, on the location" in the last two lines of this claim.

Claims 1, 2, 6, 7, and 8 incorporate comments explaining the protection covered by the claims. These comments are not necessary and should be removed.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 7 is rejected under 35 U.S.C. 102(a) as being anticipated by the prior art referenced in the Applicant's disclosure.

In regard to claim 7, the Applicant discloses a compact curved grating for analyzing the spectra composition of the optical beam, the optical beam being incident on the compact curved grating via an entrance slit, the analyzed optical beam from the compact curved grating being incident on a detector, the compact curved grating comprising a plurality of grooves, the distance between the grooves being dependent on

Art Unit: 2877

the location of the entrance slit and the detector, the center of operation wavelength, the diffraction order, the refractive index of the medium, and, optionally, on the location of the adjacent grooves.

Applicant discloses in reference to the prior art in the specification and Figures 1a and 3 that a setup for an apparatus for analyzing the spectra composition of an optical beam allows for a beam to be sent through an entrance slit to a curved grating and to reflect off the curved grating and onto a detector.

Applicant discloses in reference to the prior art in the specification and Figures 2 and 3 that a curved-grating spectrometer is well specified by geometric configurations of its components. Specifically, Applicant discloses that for a given operating wavelength center, the initial groove spacing is chosen to satisfy the diffraction grating formula for a given entrance slit and detector location. The curved grating can also be specified by the location of other grooves. (paragraph 7 of Applicant's disclosure) Furthermore, Applicant discloses that the relationship between the angle of incidence, the angle of diffraction, and the initial groove spacing ( $d$ ) of a prior art Rowland circle setup utilizing a curved diffraction grating is given by the grating formula:

$$d(\sin \theta_2 - \sin \theta_1) = m \lambda_c / n$$

where  $m$  is the diffraction order,  $n$  is the refractive index of the medium, and  $\lambda_c$  is the center of the operation wavelength. (paragraphs 10-14 of Applicant's disclosure)

In view of Applicant's disclosure as set forth, the distance between the grooves of a curved grating is known in the prior art to be dependent upon the location of the

Art Unit: 2877

entrance slit and the detector, the center of operation wavelength, the diffraction order, the refractive index of the medium, and, optionally, on the location of the adjacent grooves. These relations would hold for the curved grating used in the device of Gautherin in view of Nagata, since the relations are known to suffice for curved gratings in the prior art, as disclosed by the Applicant's disclosure.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gautherin et al. (USPN 5,114,231) in view of Nagata et al. (USPN 4,380,393), and further in view of the Applicant's disclosure.

Beginning with part a. of claim 1, Gautherin (USPN 5,114,231) discloses a spectrometer suitable for analyzing a spectra composition of an optical beam comprising:

a. an entrance slit for allowing an entry of an optical beam into the spectrometer, a location of the entrance slit being adjustable for controlling the performance of the spectrometer;

As illustrated in figure 1, Gautherin's assembly employs a Rowland design comprising a diffraction grating (2), entrance slit (3), and exit slits (4a-4c) disposed along the Rowland circle (1) (column 3, lines 58-62). The light source (5) emits light through the entrance slit (3) and illuminates the grating (2) with an angle of incidence  $a$ . This light beam is diffracted into a series of beams at set wavelengths and sent to converge through the exit slits (4a-4c) leading to detectors that measure the intensity of the wavelengths of the light beams. For each angle  $a$ , each exit slit corresponds to a specific wavelength. The entrance slit (3) of Gautherin is displaced along a Rowland circle to modify the angle  $a$ . This results in varying wavelengths being converged onto the exit slits as determined by the angle  $a$ , which is in turn determined by the position of the entrance slit. (column 4, lines 20-49) By controlling the angle  $a$  with the position of the entrance slit, a user of Gautherin's assembly is able to adjust for the wavelengths desired for measurement in the system, thus controlling the performance of the spectrometer.

Referring to part b. of claim 1,

b. a detector for detecting the optical beam, the location of the detector being adjustable for controlling the performance of the spectrometer.

Gautherin does not disclose that the detector used in the analyzer is displaceable like the entrance slit. However, Gautherin does disclose that in order to affect an



adjustment of the wavelength desired, it would be necessary to modify the position of either the entrance slit, grating, or exit slit (column 4, lines 35-40). The exit slits of Gautherin are associated with detectors (column 4, lines 30-33). Therefore, by modifying the position of an exit slit, a modification of the position of a detector would result.

An example of this positioning of the exit slit (and, therefore, detector) is disclosed in Nagata (USPN 4,380,393). Nagata discloses a spectrometer (Figure 1) comprising an entrance slit (2), diffraction grating (3), and an exit slit with an associated photoelectric detector disposed on a Rowland circle. The exit slit is designed to be moveable along the Rowland circle and as it is moved, information for each wavelength at each position of the exit slit and detector are derived. (column 1, lines 9-24) By controlling the position of the exit slit and the detector through the displacements along the Rowland circle to measure wavelengths affiliated with each position, a performance of the spectrometer can be controlled.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the use of an exit slit and affiliated detector that is controllably moved along a Rowland circle of Nagata in the apparatus of Gautherin with the exit slit controllably displaced along a Rowland circle in order to control the desired wavelength to be measured in the spectrometer, enhancing the measurement of the spectra composition of the optical beam.

Referring to part c. of Claim 1,

c. a curved grating for analyzing the spectra composition of the optical beam, the curved grating comprising a plurality of grooves, the distance between the grooves being dependent on the location of the entrance slit and the detector, the center of operation wavelength, the diffraction order, the refractive index of the medium, and, optionally, on the location of the adjacent grooves.

Gautherin in view of Nagata does not disclose a description of the distance of the groove spacing in the grating being used in the apparatus. The grating is a concave (i.e. curved) grating (column 1, line 23 of Gautherin and column 1, line 11 of Nagata). Applicant discloses in reference to the prior art in the specification and Figures 2 and 3 that a curved-grating spectrometer is well specified by geometric configurations of its components. Specifically, Applicant discloses that for a given operating wavelength center, the initial groove spacing is chosen to satisfy the diffraction grating formula for a given entrance slit and detector location. The curved grating can also be specified by the location of other grooves. (paragraph 7 of Applicant's disclosure) Furthermore, Applicant discloses that the relationship between the angle of incidence, the angle of diffraction, and the initial groove spacing ( $d$ ) of a prior art Rowland circle setup utilizing a curved diffraction grating is given by the grating formula:

$$d(\sin \theta_2 - \sin \theta_1) = m \lambda_c / n$$

where  $m$  is the diffraction order,  $n$  is the refractive index of the medium, and  $\lambda_c$  is the center of the operation wavelength. (paragraphs 10-14 of Applicant's disclosure)

In view of Applicant's disclosure as set forth, the distance between the grooves of a curved grating is known in the prior art to be dependent upon the location of the entrance slit and the detector, the center of operation wavelength, the diffraction order, the refractive index of the medium, and, optionally, on the location of the adjacent grooves. These relations would hold for the curved grating used in the device of Gautherin in view of Nagata, since the relations are known to suffice for curved gratings in the prior art, as disclosed by the Applicant's disclosure.

Regarding claim 2, the entrance slit and the detector (i.e. exit slit to send light to the detector) of Gautherin in view of Nagata are located on a tangent circle known as a Rowland circle, as set forth above in the rejection of claim 1.

Regarding claim 3, the curved grating of Gautherin in view of Nagata has a concave shape as set forth above in the rejection of claim 1. Concave gratings have an elliptical shape.

Regarding claim 4, Gautherin in view of Nagata does not disclose that the spectrometer can be in accordance with a Littrow configuration. However, the Applicant discloses that it is well-known that a grating is more efficient if the spectrometer is in a Littrow configuration. (paragraph 17, lines 11-16 of Applicant's disclosure) It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Gautherin in view of Nagata in a Littrow configuration, since this configuration results in a spectrometer with higher efficiency, resulting in a more accurate measurement of the spectra composition of the optical beam.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gautherin et al. (USPN 5,114,231) in view of Nagata et al. (USPN 4,380,393) and the Applicant's disclosure, and further in view of Koteles et al. (USPN 6,339,662).

Gautherin in view of Nagata and the Applicant's disclosure does not disclose that the spectrometer can be used as a wavelength dispersion element in a photonic integrated circuit. Koteles discloses that spectrometers utilizing gratings can be integrated with devices such as lasers, modulators, optical switches, and detectors, resulting in a wavelength sensitive photonic integrated circuit (column 1, lines 19-30). The device of Gautherin in view of Nagata and the Applicant's disclosure is a device that allows for control of the performance of the spectrometer, specifically with wavelength control. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the device of Gautherin in view of Nagata and the Applicant's disclosure in a wavelength sensitive photonic integrated circuit as disclosed by Koteles in order to provide more accurate wavelength control of the photonic integrated circuit, making the circuit more accurate for measurement.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gautherin et al. (USPN 5,114,231) in view of Nagata et al. (USPN 4,380,393) and the Applicant's disclosure, and further in view of Sohma et al. (USPN 4,820,046)

A rejection for the system of parts a. and b. of this claim has been set forth above in reference to claim 1. The system incorporates a method for using the system, and so the rejection set forth for parts a. and b. of the system of claim 1 would apply for parts a.

Art Unit: 2877

and b. of the method of claim 8. Furthermore, the rejection of part c. in claim 1 would apply for part c.i. of claim 8.

However, Gautherin in view of Nagata and the Applicant's disclosure does not disclose a method for determining the positions of other grooves, the position being determined by ensuring that path difference between adjacent grooves is an integral multiple of the wavelength in the medium as set forth in part c.ii. of claim 8.

Sohma (USPN 4,820,046) discloses a method utilizing a grating in a spectrometer for measurement of the spectra of an optical beam. Sohma discloses that when an optical path difference between light beams diffracted from adjacent grooves of the grating is equal to an integer multiple of a wavelength, the light beams are in phase and constructive interference takes place between the light beams when the factors of the grating equation (incident angle, reflected angle, groove spacing, wavelength, and order) satisfy the grating equation (column 10, lines 4-15). If the grating equation is satisfied, and the groove spacing is determined from the equation, then the position of other grooves can be determined. It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure this relation between the path difference between adjacent grooves and wavelength in the medium is satisfied in order to have the beams in phase and the grating equation satisfied.

Regarding claim 6, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Art Unit: 2877

*Ex parte Masham*, 2 USPQ2d 1647 (1987). The spectrometer as claimed is intended to be used as an isolated optical spectrometer using discrete components.

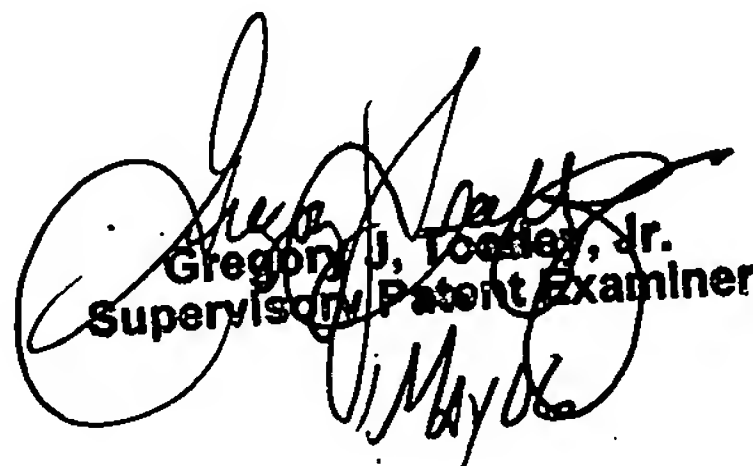
### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa J Detschel  
April 26, 2006  
MJD

  
Gregory J. Toatley, Jr.  
Supervisor, Patent Examiner